

HD | HD1000 Series Isolated Barrier



Isolated Barrier

HD1000 Series

Data Sheet



Overview

HD1000 series uses full 3-port isolation among the input, output and power supply circuits achieves highly floating systems for the pursuit of extraordinary. The isolation technology completely isolates the input and output signals, greatly improving the anti-interference and reliability of the electronic system. At present, more and more interfaces between industrial control systems and field devices use the isolated interface units instead of the original non-isolated unit. With the inside signal transfer module, HD1000 series isolators can play the roles of RTD temperature transmitter, thermocouple temperature transmitter and mV transmitter as well as repeater power supply, solenoid driver, and so on.

Features

- Full input/output/power supply isolation.
- No high-integrity earth needed.
- High voltage isolation
- 1 input 2 outputs functions
- Fault point isolation
- High transmission accuracy
- Compact modular design
- PLUG & PLAY terminals
- Standard DIN- rail mounting
- High-density assembly

■ Working principle

To improve the anti-interference and reliability of the control system, more and more interface between the industrial control system and the field device use the isolated interface unit to replace the original non-isolated unit.

The unreliable signal transmission often occurs in the grounding loop because of multi-point grounding. There are two ways to eliminate grounding loop: single-point grounding or isolation. But it is difficult to achieve the single-point grounding in actual measurement and control systems (DCS, PLC, etc.). Therefore, it is usually using the isolation interface to achieve electrical isolation among input and output circuits. These isolators break the straight electrical continuity of the electrical signals. Through modulation and demodulation, to transfer or convert the signals through the isolation medium by the coupling method, makes all I/O points of the measurement and control system completely floating I/O, eliminating the complex connection between ground sources.

Standard interface units that implement electrical isolation between input, output, and power supply and complete signal conversion typically include: isolated distributors, isolated output drivers, isolated temperature transmitters, and more.

HD1000 series isolators provide isolated power to field devices and industrial control systems through isolation transformers, and optical and electrical isolation technology to achieve isolated transmission between industrial field signals and control system signals to ensure signal transmission reliability.

■ Ordering code

HD10		HD1000 Series active isolator			
Code	Chan.	Function	Input		Output
14	1	Switch input	Contact switch, NAMUR proximity switch, etc.		Normal open contacts or close contacts (Optional)
15	1 input 2 outputs	Switch input	Contact switch, NAMUR proximity switch, etc.		Normal open contacts or close contacts (Optional)
16	2	Switch input	Contact switch, NAMUR proximity switch, etc.		Normal open contacts or close contacts (Optional)
40	1	Voltage input	Max (0~50)V		(4~20)mA or (1~5)V output (Optional).
42	1	Repeater power supply, supporting bi-directional HART communication	2/3-wire transmitter (4~20)mA or (4~20)mA current direct input		(4~20)mA (Active/Passive model) or (1~5)V output (Optional)
43	1 input 2 outputs	Repeater power supply, supporting bi-directional HART communication	2/3-wire transmitter (4~20)mA or (4~20)mA current direct input		(4~20)mA (Active/Passive model) or (1~5)V output (Optional)
44	2	Repeater power supply, supporting bi-directional HART communication	2/3-wire transmitter (4~20)mA or (4~20)mA current direct input		(4~20)mA (Active/Passive model) or (1~5)V output (Optional)
46	1	AO, support bi-directional HART communication	(4~20)mA input		(4~20)mA or (1~5)V output (Optional)
49	2	AO, support bi-directional HART communication	(4~20)mA input		(4~20)mA or (1~5)V output (Optional)
52	1	AI, RTD or voltage or current sources	(0~20)mA input, (-10~10)V input, Pt100(-200~850)°C input		(0~20)mA or (-10~10)V output
53	1	AI, RTD, voltage, current sources, RS-485 and LoRa communication	(0~20)mA input, (-10~10)V input, Pt100(-200~850)°C input, RS-485 input, LoRa input		(0~20)mA output, (-10~10)V output, RS-485 output, LoRa output
71	1	TC/mV Converter	TC	R (-20~1750)°C (Optional)	(4~20)mA or (1~5)V output (Optional)
				J (-200~1200)°C (Optional)	
				K (-200~1370)°C (Optional)	
				B (600~1800)°C (Optional)	
				E (-200~950)°C (Optional)	
				N (-200~1300)°C (Optional)	
				S (-20~1750)°C (Optional)	
			T (-200~400)°C (Optional)		
mV	(-75~75)mV (Optional)				
72	1	RTD/Resistance Converter	RTD	Pt100 (-200~800)°C (Optional)	(4~20)mA or (1~5)V output (Optional)
				Cu50 (-50~150)°C (Optional)	
			Pt1000 (-50~300)°C (Optional)		
Res.	(0~2200)Ω (Optional)				
76	1 input 2 outputs	TC/mV Converter	TC	R (-20~1750)°C (Optional)	(4~20)mA or (1~5)V output (Optional)
				J (-200~1200)°C (Optional)	
				K (-200~1370)°C (Optional)	
				B (600~1800)°C (Optional)	
				E (-200~950)°C (Optional)	
				N (-200~1300)°C (Optional)	
				S (-20~1750)°C (Optional)	
			T (-200~400)°C (Optional)		
mV	(-75~75)mV (Optional)				
77	1 input 2 outputs	RTD/Resistance Converter	RTD	Pt100 (-200~800)°C (Optional)	(4~20)mA or (1~5)V output (Optional)
				Cu50 (-50~150)°C (Optional)	
				Pt1000 (-50~300)°C (Optional)	
			Res.	(0~2200)Ω (Optional)	

HD10 □

HD1100 series Loop-powered isolator					
Code	Chan.	Function	Input		Output
41	1	Passive analog input	Loop-powered (4~20)mA		2-wire (4~20)mA output
44	2	Passive analog input	Loop-powered (4~20)mA		2-wire (4~20)mA output
45	1	Passive current transmission	(4~20)mA		(4~20)mA or (1~5)V output (Optional)
49	2	Passive current transmission	(4~20)mA		(4~20)mA or (1~5)V output (Optional)
71	1	Thermocouple Converter	TC	E (-200~1000)°C (Optional)	2-wire (4~20)mA output
				J (-210~1200)°C (Optional)	
				K (-270~1372)°C (Optional)	
				N (-200~1300)°C (Optional)	
				T (-270~400)°C (Optional)	
				B (300~1820)°C (Optional)	
				R (0~1768)°C (Optional)	
				S (0~1768)°C (Optional)	
			mV	(-10~75)mV (Optional)	
				(-100~1100)mV (Optional)	
72	1	RTD Converter	RTD	Pt100 (-200~850)°C (Optional)	2-wire (4~20)mA output
				Pt500 (-200~850)°C (Optional)	
				Pt1000 (-200~350)°C (Optional)	
				Cu50 (-50~150)°C (Optional)	
				Cu100 (-50~150)°C (Optional)	
				Ni100 (-60~180)°C (Optional)	
				Ni500 (-60~180)°C (Optional)	
				Ni1000 (-60~150)°C (Optional)	
			Res	(0~390)Ω (Optional)	
				(0~2000)Ω (Optional)	

HD11 □

***Note:**

*1: The signal type and measurement range must be given when ordering HD1071/1072/1076/1077/1171/1172. For thermocouple input signal, the wiring terminal 1-2 or 1-2-3 will be equipped with CJC PLUG terminals (with cold junction compensation component not for cable connection); For other input signals, the wiring terminal 1-2 or 1-2-3 will be equipped with Wiring common terminal, can be used for cable connection.

*2: The Inscan HDC (Including the host computer configuration software and supporting dedicated communication cable use for HD1071/1072/1076/1077) and CJC PLUG terminals or common wiring terminals are available. Working with Inscan HDC, users can set the type and range of signals of HD1071/1072/1076/1077.

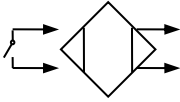
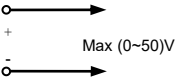
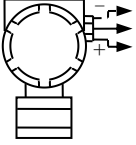
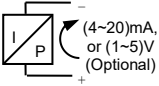
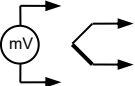
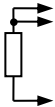
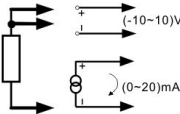
*3: The signal type and measurement range must be given when ordering HD1171/HD1172. In case the signal type or measurement range need to be changed, must send them back for modifying.

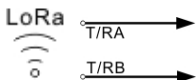
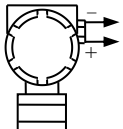
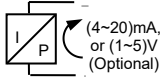
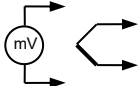
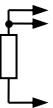
*4: HD1052/HD1053 must be equipped with HD55-BT Bluetooth module and HD105X configuration software for Android, which configure the module's inputs and outputs.

*5: HD1053 LoRa/RS-485 can only be used as an input or output at the same time.

*6: HD1053 has an external LoRa antenna.

■ Ordering and tables

Switch input	Model	Chan.	Input	Output	Note
	HD1014	1	Contact switch, NAMUR proximity switch, etc.	Normal open contacts or close contacts (Optional)	(0~100)Hz
	HD1015	1 input 2 outputs			
	HD1016	2			
Voltage input	Model	Chan.	Input	Output	Note
	HD1040	1	Max (0~50)V	(4~20)mA or (1~5)V (Optional)	Support customization, such as (0~10)V input, (0~40)V input etc.
2/3-wire transmitter current input	Model	Chan.	Input	Output	Note
	HD1042	1	2/3-wire transmitter (4~20)mA or (4~20)mA current direct input	(4~20)mA (Active/Passive model) or (1~5)V (Optional)	Including isolated transmitter power supply. All model supports bi-directional HART communication.
	HD1043	1 input 2 outputs			
	HD1044	2			
Analog output	Model	Chan.	Input	Output	Note
	HD1046	1	(4~20)mA or (1~5)V Electric transducer/valve positioner etc.	(4~20)mA	All model supports bi-directional HART communication.
	HD1049	2			
mV/TC input	Model	Chan.	Input	Output	Note
	HD1071	1	mV: (-75~75)mV TC: J,K,T,E,R,S,N,B	(4~20)mA, or (1~5)V (Optional)	The TC type and measurement range must be given when ordering. Special type can be customized.
	HD1076	1 input 2 outputs			
RTD/Res input	Model	Chan.	Input	Output	Note
	HD1072	1	3-Wire Pt100, Pt1000, Cu50 etc. Measure Range: Res.: (0~2200) Ω Pt100: (-200~800) $^{\circ}\text{C}$ Pt1000: (-50~300) $^{\circ}\text{C}$ Cu50: (-50~150) $^{\circ}\text{C}$	(4~20)mA, or (1~5)V (Optional)	The TC type and measurement range must be given when ordering. Special type can be customized.
	HD1077	1 input 2 outputs			
Analog input	Model	Chan.	Input	Output	Note
	HD1052	1	Voltage: (-10~10)V Current: (0~20)mA Pt100: (-200~850) $^{\circ}\text{C}$ Freely definable within the measuring range	(0~20)mA or (-10~10)V Freely definable within the measuring range	Input and output mapping can be freely defined via the HD55-BT Bluetooth module
	HD1053	1			

LoRa/RS-485	Model	Chan.	Input	Output	Note
	HD1053	1	LoRa/RS-485	LoRa/RS-485	LoRa/RS-485 can only be used as input or output at the same time.
2-wire transmitter input	Model	Chan.	Input	Output	Note
	HD1141	1	2-wire transmitter	2-wire (4~20)mA	Passive isolator
	HD1144	2			
Analog output	Model	Chan.	Input	Output	Note
	HD1145	1	(4~20)mA or (1~5)V electric transducer/valve positioner etc.	(4~20)mA	Passive isolator
	HD1149	2			
mV/TC input	Model	Chan.	Input	Output	Note
	HD1171	1	mV: (-100~1100)mV TC: E,J,K,N,T,B,R,S	2-wire (4~20)mA	The TC type and measurement range must be given when ordering. Special type can be customized. Passive isolator.
RTD/Res input	Model	Chan.	Input	Output	Note
	HD1172	1	3-wire resistance, Pt100, Pt500, Pt1000, Cu50, Cu100, Ni100, Ni500, Ni1000 etc.	2-wire (4~20)mA	The TC type and measurement range must be given when ordering. Special type can be customized. Passive isolator.

■ Power supply(Active isolator)

Power supply: (20~35)VDC(The power supply of the control instrument connected to the isolator or the voltage generated inside must not exceed 250VAC/DC.)

Max voltage U_m : 250VAC/DC

■ Environmental limits

Operation temperature: (-20~60)°C

Storage temperature: (-40~80)°C

Relative humidity: (5~95)%RH

■ Basic structure

17.5mm model:

Weight: 110g approx.

Dimension: 114.5mm×99.0mm×17.5mm

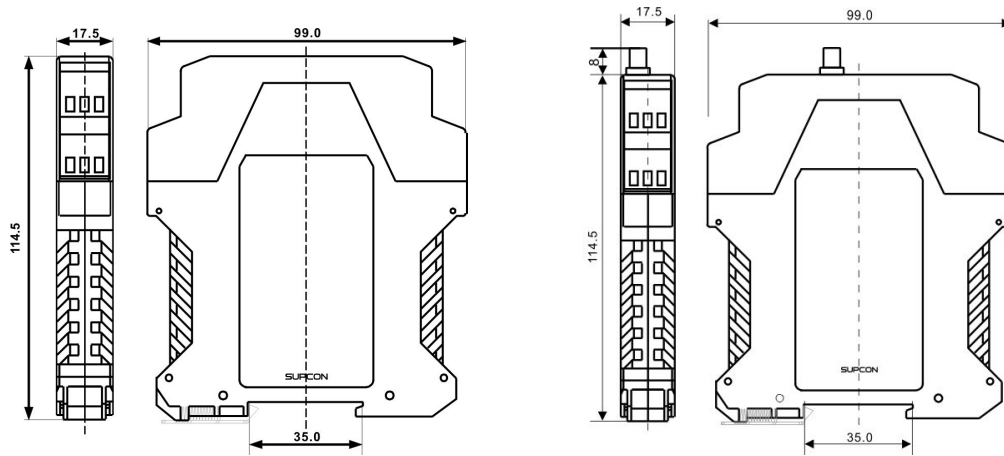
12.5mm model:

Weight: 100g approx

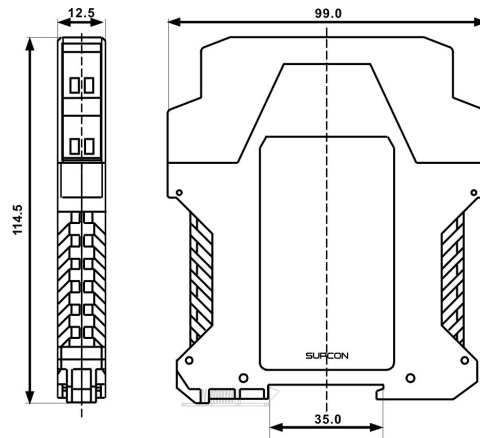
Dimension: 114.5mm×99.0mm×12.5mm

■ Overall dimensions

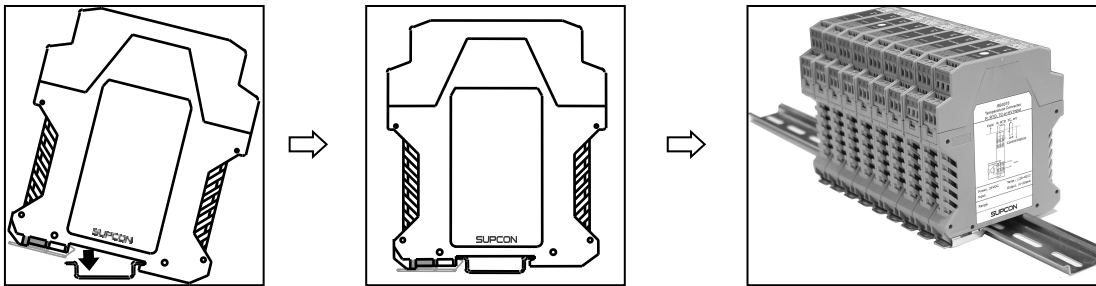
17.5mm model:



12.5mm model:



■ Mounting



■ Mounting notes

1. Air ambient: where has no excessive amount of corrosive gases to the chrome-plate, nickel-plate or silver-plate.
2. The leads of hazardous area and safe area must be separated in cable duct. It is not allowed to mix other power supply into the field part of the isolation.
3. All of the isolator hazardous-area terminals must be at same side to avoid confusion during installation.
4. Pay attention to type, power supply polarity, voltage and terminal tags, when isolator is respectively powered for debugging.
5. Before using the insulation resistance meter to check insulation between terminals, disconnect all of the isolator. If not, the internal fast acting fuse would be fused.
6. Isolators are damageable. It is forbidden to replace components of isolator without SUPCON's permission. The use should send the damaged isolators to our company for repair.
7. When mounting, operating and maintaining the units, users should comply with the relevant requirements of the user's manual.

■ HD1014 SINGLE CHANNEL SWITCH/PROXIMITY INPUT ISOLATOR

HD1014 support switch or NAMUR proximity switch input. The signal input is processed by Schmitt circuit, which has excellent anti-interference and provide standard relay contact output. The indicator LED on the top of isolator indicates the status of power supply and output.

Number of channels

1

Power supply

Voltage: (20~35)VDC

Current: 35mA at 24VDC

Output characteristics

Output: Normal open contacts or close contacts (Optional)

Drive capability: 1A/30VDC, 0.5A/125VAC

Input signal

Proximity detectors (NAMUR)

Voltage applied to sensor

(7~9) VDC from 1k Ω

Input characteristics

Output energized if $I_{in} > 2.1mA$

Output de-energized if $I_{in} < 1.2mA$

**Note: When customize output as closed contacts output, the status is reversed.*

Response time

Better than 10ms

Isolation

Better than 2500VAC between input/output terminals

LED Indicator

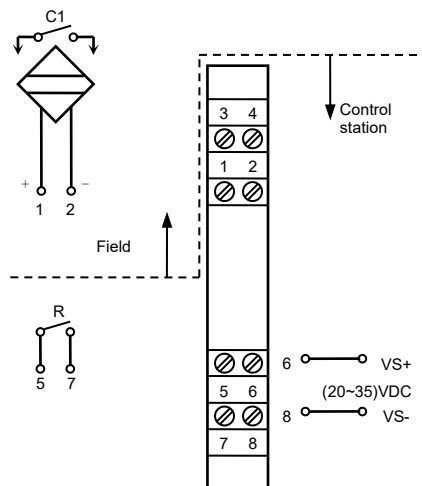
PWR: Green when power on.

OUT: Green when output turns on.

Application

NAMUR proximity switch, switch, etc.

Wiring



*Please read the ordering instructions carefully when selecting the type

■ HD1015 1 INPUT 2 OUTPUTS SWITCH/PROXIMITY INPUT ISOLATOR

HD1015 support single channel switch or NAMUR proximity switch input. The signal input is processed by Schmitt circuit which has excellent anti-interference and provide standard relay contact output. The indicator LED on the top of isolator indicates the status of power supply and output.

Number of channels

1 input 2 outputs

Power supply

Voltage: (20~35)VDC

Current: 35mA at 24V

Output characteristics

Output: normal open contacts or close contacts (Optional)

Drive capability: 1A/30VDC, 0.5A/125VAC

Input signal

Switch/proximity switch (NAMUR)

Voltage applied to sensor

(7~9)VDC from 1kΩ

Input characteristics

Output energized if $I_{in} > 2.1mA$

Output de-energized if $I_{in} < 1.2mA$

**Note: When customize output as closed contacts output, the status is reversed.*

Response time

Better than 10ms

Isolation

Better than 2500VAC between input/output terminals

LED indicator

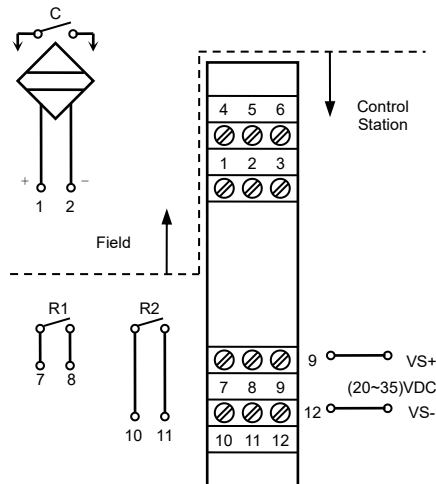
PWR: Green when power on.

OUT: Green when output turns on

Application

NAMUR proximity switch, switch, etc.

Wiring



*Please read the ordering instructions carefully when selecting the type

■ HD1016 DUAL CHANNEL SWITCH INPUT ISOLATOR

HD1016 support dual channel switch or NAMUR proximity switch input. The inputs are processed by Schmitt circuit which has excellent anti-interference and provide standard relay contact output. The indicator LED on the top of isolator indicates the status of power supply and output.

Number of channels

2

Power supply

Voltage: (20~35)VDC

Current: 35mA at 24V

Output characteristics

Output: normal open contacts or close contacts (Optional)

Drive capability: 1A/30VDC, 0.5A/125VAC

Input signal

Switch/Proximity switch (NAMUR)

Voltage applied to sensor

(7~9)VDC from 1kΩ

Input characteristics

Output energized if $I_{in} > 2.1mA$

Output de-energized if $I_{in} < 1.2mA$

**Note: When customize output as closed contacts output, the status is reversed.*

Response time

Better than 10ms

Isolation

Better than 2500VAC between input/output terminals

LED indicator

PWR: Green when power on.

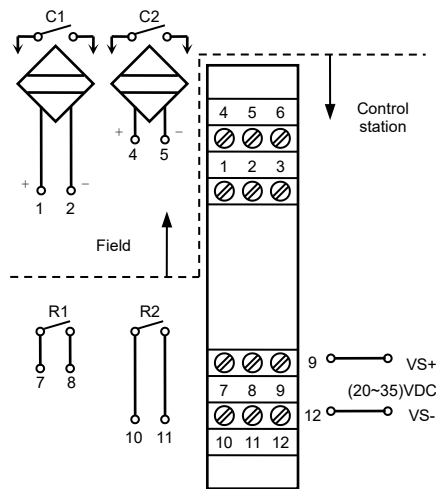
OUT1: Green when output 1 turns on

OUT2: Green when output 2 turns on

Application

NAMUR proximity switch, switch, etc.

Wiring



*Please read the ordering instructions carefully when selecting the type

■ HD1040 VOLTAGE CONVERTER

The HD1040 accepts a signal max (0~50)V from the field, and converts to 4/20mA or 1/5V signal to drive a Load in control-station side. The signal range can be customized within the max range, such as (0~10)V, (0~40)V etc.

Number of channels

1

Power supply

Current: 80mA at 20mA

Power: 1.92W at 24V, 20mA

Input signal range

(0~50)V

Input signal span

(10~50)V

Output signal range

(4~20)mA or (1~5)V

**Note: Clear indication should be given in ordering code when 1 to 5V is needed.*

Output characteristics

Load capacity: (0~550) Ω

Output ripple: < 40 μ A peak-to-peak

Response time

Settles to within 10% of final value after typically 60ms

Transfer accuracy

Better than $\pm 16\mu$ A

Better than ± 4 mV

Temperature drift

Better than $\pm 1.6\mu$ A/ $^{\circ}$ C

Better than ± 0.4 mV/ $^{\circ}$ C

Isolation

Better than 2500VAC between input/output terminals

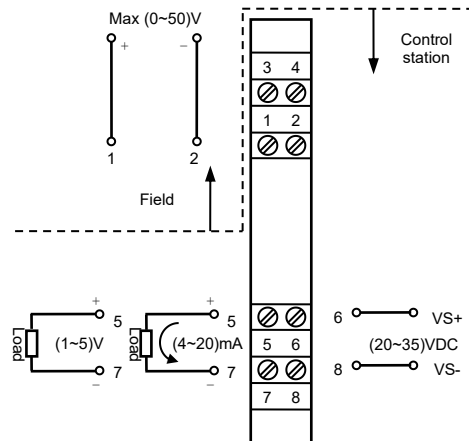
LED indicator

PWR: Green when power on

Application

Voltage output device

Wiring



*Please read the ordering instructions carefully when selecting the type

HD1042 REPEATER POWER SUPPLY

The HD1042 provides a fully floating DC supply for energizing a conventional 2/3-wire 4/20mA transmitter located in the field or repeats the current source signal (4~20)mA or converts into (1~5)V. For smart transmitter, HD1042 supports bi-directional transmission of HART communication.

Number of channels

1

Power supply

Voltage: (20~35)VDC

Current: 51mA at 24VDC, 20mA

Input and output signal range

(4~20)mA

**Note: Max support (0~24)mA*

Output characteristics

Load capability: (0~360) Ω at 24mA

(0~450) Ω at 20mA

Output impedance: > 1M Ω

When the top switch "S" is in the position of "I", it is internal power supply output(Default)

When the top switch "S" is in the position of "II", it is external power supply output

**Note: Clear indication should be given in ordering code when 1 to 5V is needed.*

Response time

750 μ s (with 250 Ω Load)

Power supply output (The terminal at the side of field area)

When output current at 20mA, the power supply voltage > 20VDC

Communications supported

Bi-directional HART communication

Digital signal bandwidth

500Hz~10kHz

Transmission accuracy

Better than $\pm 15\mu$ A

Temperature drift

Better than $\pm 1\mu$ A/ $^{\circ}$ C

LED indicator

PWR: Green when power on.

LFD: Red when line fault, line fault detection.

**Note: Faults cover open circle, output overload and power supply under voltage.*

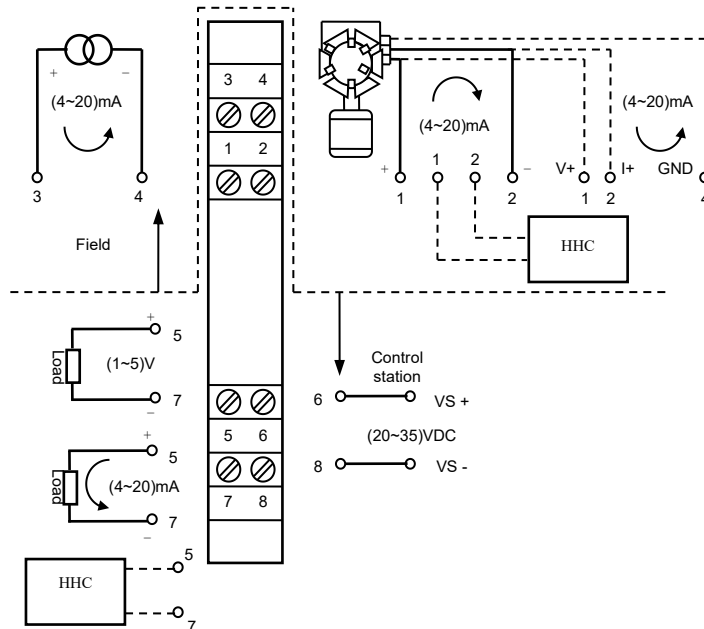
Isolation

Better than 2500VAC between input and output terminals.

Application

2/3-wire transmitter or current

Wiring



*Please read the ordering instructions carefully when selecting the type

HD1043 1 INPUT 2 OUTPUTS ANALOG INPUT ISOLATOR

The HD1043 provides a fully floating DC supply for energizing a conventional 2/3-wire transmitter located in the field or repeats the current in two floating circuits to drive different control-station loads. Each output can be customized to (1~5)V output. For intelligent pressure transmitter, the HD1043 supports bi-directional HART communication.

Number of channels
1 input 2 outputs

Power supply
Voltage: (20~35)VDC
Current: 75mA at 24V with 20mA

Input and output signal range
(4~20)mA

**Note: Max up to (0~24)mA signal range*

Output characteristics
Load capability: (0~360) Ω at 24mA
(0~450) Ω at 20mA

Output impedance: > 1M Ω

When the top switch S1 is in the position of "I", the channel 1 is internal power supply output (Default).

When the top switch S1 is in the position of "II", the channel 1 is external power supply output.

When the top switch S2 is in the position of "I", the channel 2 is internal power supply (Default).

When the top switch S2 is in the position of "II", the channel 2 is external power supply output.

**Note: Clear indication should be given in ordering code when 1 to 5V is needed.*

Response time
750 μ s (with 250 Ω Load)

Power supply output (The terminal at the side of field area)
When output current at 20mA, the power supply voltage > 20VDC

Communications supported
Both support bi-direction HART communication (asynchronous)

Digital signal bandwidth
500Hz~10kHz

Transmission accuracy
Better than $\pm 15\mu$ A

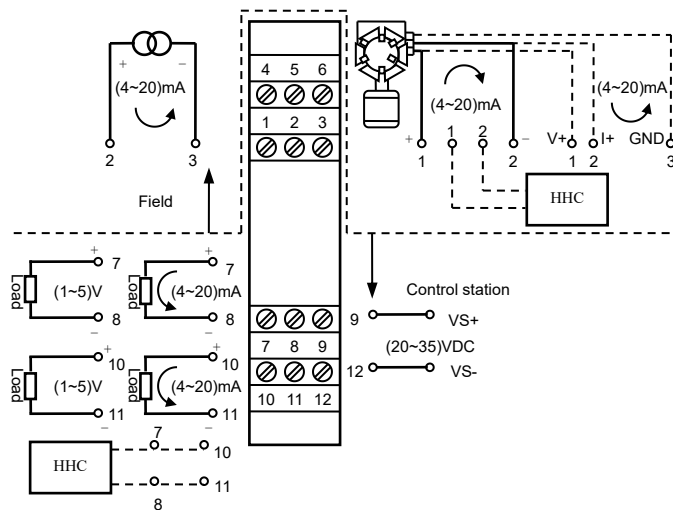
Temperature drift
Better than $\pm 1\mu$ A/ $^{\circ}$ C

LED indicator
PWR: Green for power on indication
CH1: Red for CH1 line fault detection indication.
CH2: Red for CH2 line fault detection indication.
**note: faults cover open circle , output overload and power supply undervoltage.*

Isolation
Better than 2500VAC between input and output terminals.

Application
2/3-wire transmitter or current

Wiring



**Please read the ordering instructions carefully when selecting the type*

HD1044 DUAL CHANNEL ANALOG INPUT ISOLATOR

The HD1044 provides a fully floating DC supply for 2 pcs of 2/3-wire (4~20mA) transmitter located in the field or repeats the current or converts into (1~5)V signal output. For intelligent pressure transmitter, the HD1043 supports bi-directional HART communication.

Number of channels

2

Power supply

Voltage: (20~35)VDC

Current: 96mA at 24V with 20mA

Input and output signal range

(4~20)mA

**Note: Max up to (0~24)mA signal range*

Output characteristics

Load capability: (0~360) Ω at 24mA

(0~450) Ω at 20mA

Output impedance: > 1M Ω

When the top switch S1 is in the position of "I", the channel 1 is internal power supply output (Default).

When the top switch S1 is in the position of "II", the channel 1 is external power supply output.

When the top switch S2 is in the position of "1", the channel 2 is internal power supply (Default).

When the top switch S2 is in the position of "II", the channel 2 is external power supply output.

**Note: Clear indication should be given in ordering code when 1 to 5V is needed.*

Response time

750 μ s (with 250 Ω Load)

Power supply output(The terminal at the side of field area)

When output current at 20mA, the power supply voltage > 20VDC

Communications supported

Both support bi-direction HART communication (asynchronism)

Digital signal bandwidth

500Hz~10kHz

Transmission accuracy

Better than $\pm 15\mu$ A

Temperature drift

Better than $\pm 1\mu$ A/ $^{\circ}$ C

LED indicator

PWR: Green for power on indication

CH1: Red for CH1 line fault detection indication.

CH2: Red for CH2 line fault detection indication.

**Note: Faults cover open circle , output overload and power supply under voltage.*

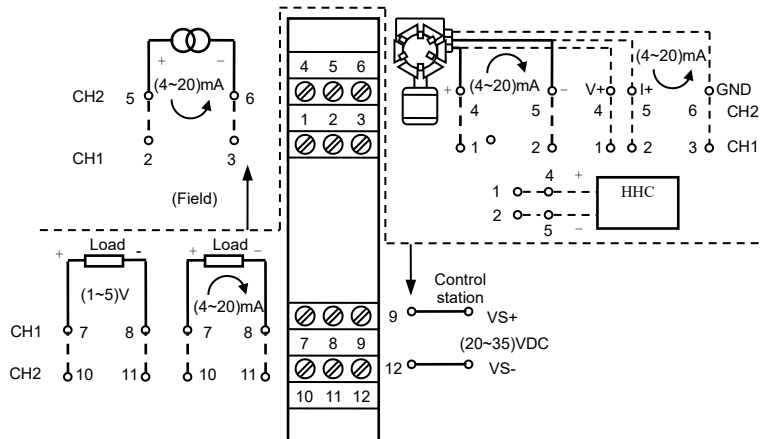
Isolation

Better than 2500VAC between input and output terminals.

Application

2/3-wire transmitter or current

Wiring



*Please read the ordering instructions carefully when selecting the type

■ HD1046 SINGLE CHANNEL ANALOG OUTPUT ISOLATOR

The HD1046 accepts a (4~20)mA signal from a controller and repeats the current source signal or converts into (1~5)V signal to drive a actuator (electrical pneumatic converter, valve positioner etc.) in the field area. For smart actuators, HD1046 supports bi-directional transmission of HART communication .

Number of channels

1

Power supply

Voltage: (20~35)VDC

Current: 40mA at 20mA output, 250Ω Load,
24V power supply

Input and output signal range

(4~20)mA

**Note: Max support (0~24)mA*

Output characteristics

Load capability: (0~520)Ω at 24mA

(0~750)Ω at 20mA

Output ripple: Peak to peak value < 40μA

Output impedance: > 1MΩ

**Note: Clear indication should be given in ordering code when 1 to 5V is needed.*

Response time

Settles within 200μA of final value within
10ms

Communications supported

Bi-direction HART communication

Digital signal bandwidth

(500~10k)Hz

Transmission accuracy

Better than ±16μA

Temperature drift

Better than ±1μA/°C

LED indicator

PWR: Green for power on indication.

LFD: Red for line fault detection indication.

**Note: Faults cover open circle, output overload and power supply under voltage.*

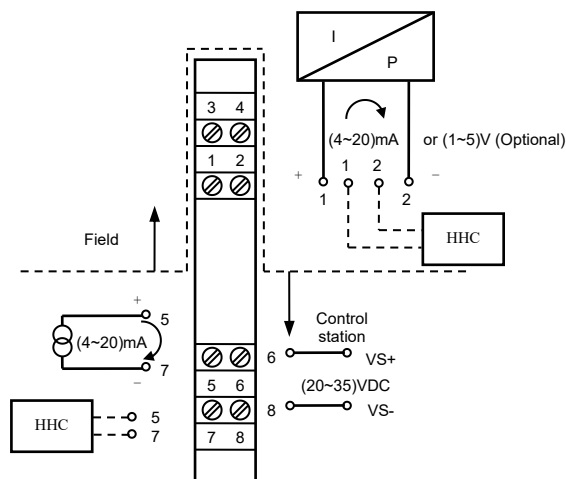
Isolation

Better than 2500VAC between input and output terminals.

Application

Electrical pneumatic converter, valve positioner, etc.

Wiring



*Please read the ordering instructions carefully when selecting the type

■ HD1049 DUAL CHANNEL ANALOG OUTPUT ISOLATOR

The HD1049 accepts two (4~20)mA signal from a controller and repeats the current source signal or converts into (1~5)V signal to drive an actuator (electrical pneumatic converter, valve positioner etc.) in the field area. For smart actuators, HD1049 supports bi-directional transmission of HART communication .

Number of channels

2

Power supply

Voltage: (20~35)VDC

Current: 70mA at 20mA output, 250Ω Load,
24V power supply

Input and output signal range

(4~20)mA

**Note: Max support (0~24)mA*

Output characteristics

Load capability: (0~520)Ω at 24mA

(0~750)Ω at 20mA

Output ripple: Peak to peak value < 40μA

Output impedance: > 1MΩ

**Note: Clear indication should be given in ordering code when 1 to 5V is needed.*

Response time

Settles within 200μA of final value within

10ms

Communications supported

Bi-direction HART communication

Digital signal bandwidth

(500~10k)Hz

Transmission accuracy

Better than ±16μA

Temperature drift

Better than ±1μA/°C

LED indicator

PWR: Green for power on indication

CH1: Red for CH1 line fault detection indication.

CH2: Red for CH2 line fault detection indication.

**Note: Faults cover open circle, output overload and power supply under voltage.*

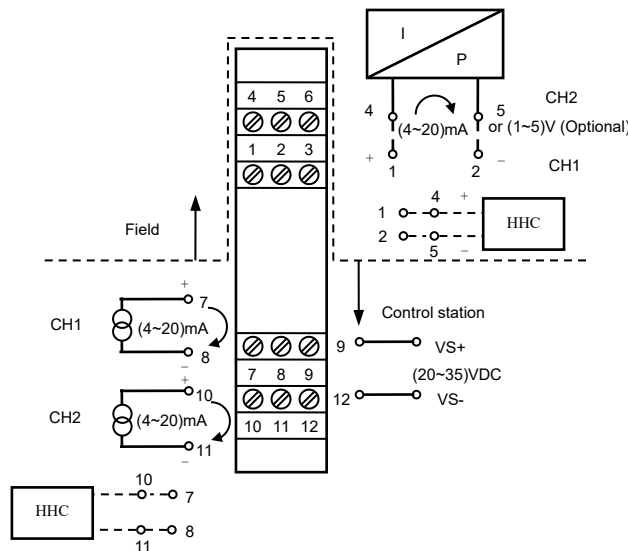
Isolation

Better than 2500VAC between input and output terminals.

Application

Electrical pneumatic converter, valve positioner, etc.

Wiring



*Please read the ordering instructions carefully when selecting the type.

■ HD1052 HYBRID ANALOG INPUT&OUTPUT ISOLATOR

The HD1052 supports voltage, current or Pt100 input and voltage or current output switching. The input and output signal types and ranges can be freely configured via the HD55-BT wireless configuration module to meet unconventional range requirements. The isolator has a power supply indicator and signal status indicator on the top.

Number of channels

1

Power supply

Voltage: (20~35)VDC

Current: 60mA at 24V power supply, 20mA

output

Output characteristics

Current: (0~20)mA, the minimum span allowed is 5mA

Load capability: $\leq 750\Omega$

Voltage: (-10~10)V, the minimum span allowed is 4V

Load capability: $\geq 2k\Omega$

Input characteristics

Voltage: (-10~10)V, the minimum span allowed is 4V

Current: (0~20)mA, the minimum span allowed is 5mA

Pt100: (-200~850) $^{\circ}\text{C}$

**Note: Any range signal can be configured within the range, but not less than the minimum span.*

Transmission characteristics

Output accuracy: Better than 0.1%F.S.

Temperature drift: Better than 0.01%F.S./ $^{\circ}\text{C}$

Response time

Better than 500ms

Isolation

Better than 1000VAC between input and output terminals.

Line fault detection

Signal range or type error on the input side, system configuration error or system module failure, that make alarm signal output.

LED indicator

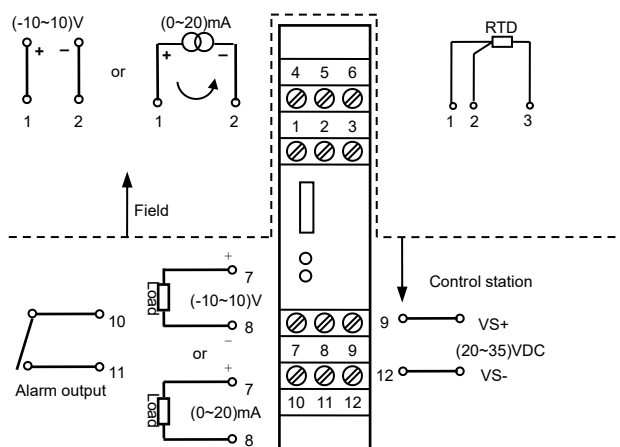
PWR: Green for power on indication

STS: Red(Channel status indicator).Red blinking for wrong signal range or type; Red holding for wrong system configuration.

Application

Any analogue signal transmission equipment

Wiring



HD1053 HYBRID ANALOG INPUT&OUTPUT ISOLATOR

The HD1053 supports voltage, current input and output or Pt100 input, RS-485 communication and LoRa wireless communication. The signal types and ranges can be freely configured by HD55-BT wireless configuration module to meet non-standard range requirements. The isolator has a power supply indicator and signal status indicator on the top.

Number of channels

1

Power supply

Voltage: (20~35)VDC

Current: 60mA at 24V power supply, 20mA

output

Maximum instantaneous current: 100mA

(During the LoRa transmission period)

Output characteristics

Current: (0~20)mA, the minimum span is 5mA

Load capability: $\leq 750\Omega$

Voltage: (-10~10)V, the minimum span is 4V

Load capability: $\geq 2k\Omega$

Input characteristics

Voltage: (-10~10)V, the minimum span is 4V

Current: (0~20)mA, the minimum span is 5mA

Pt100: (-200~850) $^{\circ}C$

**Note: Any range signal can be configured within the range, but not less than the minimum span.*

RS-485 communication

Signal type: RS-485 digital signal

Voltage: Standard RS-485 differential voltage

Mode: Slave mode, continuous mode

**Note: 485 can only be used as input or output at the same time*

LoRa wireless communication

Emission gain: 20dBm

Working frequency band: (420~483)MHz

Minimum interval: 1MHz

Mode: Slave mode, continuous mode

Freely selectable bandwidth, spreading factor, encoding rate and header mode. Support for custom leading codes and Load lengths.

**Note: LoRa can only be used as input or output at the same time*

Transmission characteristics

Output accuracy: Better than 0.1%F.S.

Temperature drift: Better than 0.01%F.S./ $^{\circ}C$

Response time

Analog signal: Better than 500ms

LoRa: Better than 3000ms

Isolation

Better than 1000VAC between input and output terminals.

Line fault detection

Signal range or type error on the input side, communication timeout, system configuration error or system module failure, that make alarm signal output.

LED indicator

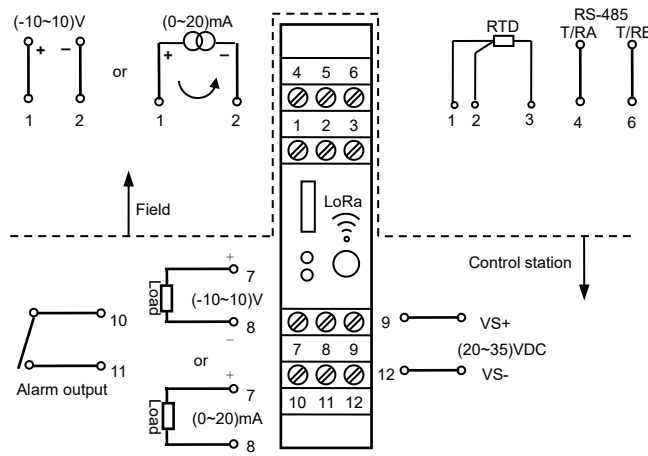
PWR: Green for power on indication

STS: Green or red(channel status indicator). Off in normal condition, Green holding when LoRa sends data. Red blinking for wrong signal range or type. Red holding for wrong system configuration.

Application

Any analogue signal transmission equipment

Wiring



■ HD1071 SINGLE CHANNEL THERMOCOUPLE TRANSMISSION ISOLATOR

The HD1071 accepts thermocouple or mV signals from field area and converts into (4~20)mA or (1~5)V to control area. Users can customize the type of signals and input range within the max range.

Number of channels

1

Power supply

Voltage: (20~35)VDC

Current: 40mA (24V at 20mA output)

Input and output signal range

Types J, K, T, E, R, S, B or N THCs

(-75~75)mV

Output signal

(4~20)mA

**Note: Clear indication should be given in ordering code when 1 to 5V is needed.*

Output Load capability

(0~450) Ω

Response time

About 500ms

Cold junction compensation

Automatic

Error: $\pm 1^{\circ}\text{C}$

Over range output

When input over range value, the fixed output of current as below:

Bottom limit: 3.6mA

Top limit: 21.6mA

Sensor burnout indication

Downscale default, upscale selectable

Upscale valve: 22mA

Downscale valve: 3.2mA

Common mode rejection

120dB (250V@50Hz)

Series-mode rejection

40dB (50Hz)

Transmission accuracy

Input

mV/THC: $\pm 15\mu\text{V}$ or $\pm 0.05\%$ of input value (whichever is greater)

Output: $\pm 11\mu\text{A}$

Temperature drift

Input

mV/THC: $\pm 0.003\%/^{\circ}\text{C}$ of input valueOutput: $\pm 0.6\mu\text{A}/^{\circ}\text{C}$

LED indicator

PWR: Green for power on indication.

STS: Green for normal working status indication, blinking green for over range indication, red for error status.

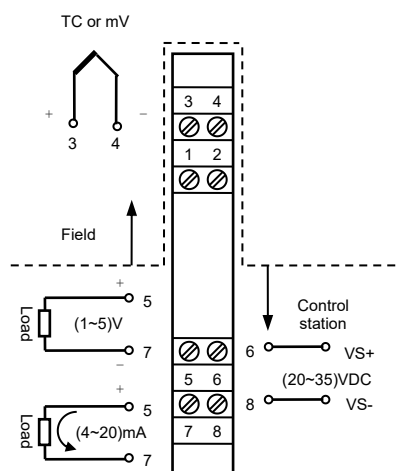
Isolation

Better than 2500VAC between input and output terminals.

Application

Types J, K, T, E, R, S, B or N THCs, mV

Wiring



*Please read the ordering instructions carefully when selecting the type.

HD1072 SINGLE CHANNEL RTD TRANSMISSION ISOLATOR

The HD1072 accepts RTD or resistance signals from field area and converts into (4~20)mA or (1~5)V to control area. Users can customize the type of input signal and input range within the max range.

Number of channels

1

Power supply

Voltage: (20~35)VDC

Current: 40mA (24V at 20mA output)

Input and output signal range

3-wire Pt100, Pt1000, Cu50, (0~2200) Ω

**Note: Excitation current < 0.5mA*

Output signal

(4~20)mA

**Note: Clear indication should be given in ordering code when 1 to 5V is needed.*

Output Load capability

(0~450) Ω

Response time

About 500ms

Over range output

When input over range value, the fixed output of current as below:

Bottom limit: 3.6mA

Top limit: 21.6mA

Sensor burnout indication

Downscale default, upscale selectable

Upscale valve: 22mA

Downscale valve: 3.2mA

Common mode rejection

120dB (250V@50Hz)

Series mode rejection

40dB (50Hz)

Transmission accuracy

Input

Cu50/Pt100: $\pm 80\text{m}\Omega$

Pt1000: $\pm 400\text{m}\Omega$

Output: $\pm 11\mu\text{A}$

Temperature drift

Input

Cu50/Pt100: $\pm 7\text{m}\Omega/^{\circ}\text{C}$

Pt1000: $\pm 40\text{m}\Omega/^{\circ}\text{C}$

Output: $\pm 0.6\mu\text{A}/^{\circ}\text{C}$

LED indicator

PWR: Green for power on indication.

STS: Green for normal working status indication, blinking green for over range indication, red for error status.

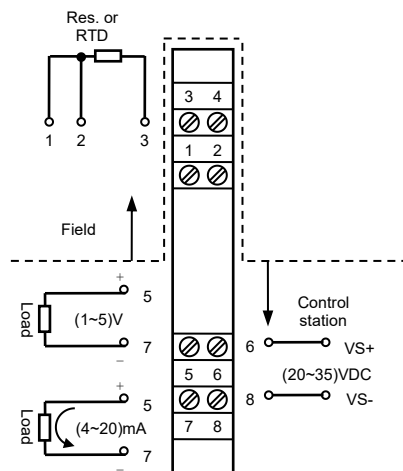
Isolation

Better than 2500VAC between input and output terminals.

Application

Cu50, Pt100, Pt1000 and resistance

Wiring



*Please read the ordering instructions carefully when selecting the type.

■ HD1076 1 INPUT 2 OUTPUTS THERMOCOUPLE TRANSMISSION ISOLATOR

The HD1076 accepts thermocouple or mV signals from field area and converts into 2 channels with (4~20)mA or (1~5)V to control area. Users can customize the type of signal and input range within the max range.

Number of channels

1 input 2 outputs

Power supply

Voltage: (20~35)VDC

Current: 80mA (24V at 20mA output)

Input and output signal range

Type J, K, T, E, R, S, B or N THCs

(-75~75)mV

Output signal

(4~20)mA

**Note: Clear indication should be given in ordering code when 1 to 5V is needed.*

Output Load capability

(0~450) Ω

Respond time

About 500ms

Cold junction compensation

Automatic

Error: $\pm 1^{\circ}\text{C}$

Over range output

When input over range value, the fixed output of current as below:

Bottom limit: 3.6mA

Top limit: 21.6mA

Sensor burnout indication

Downscale default, upscale selectable

Upscale valve: 22mA

Downscale valve: 3.2mA

Common mode rejection

120dB (250V@50Hz)

Series-mode rejection

40dB (50Hz)

Transmission accuracy

Input

mV/THC: $\pm 15\mu\text{V}$ or $\pm 0.05\%$ of input value (whichever is greater)

Output: $\pm 11\mu\text{A}$

Temperature drift

Input

mV/THC: $\pm 0.003\%/^{\circ}\text{C}$ of input value

Output: $\pm 0.6\mu\text{A}/^{\circ}\text{C}$

LED indicator

PWR:Green for power on indication.

STS:Green for normal working status indication, blinking green for over range indication, red for error status.

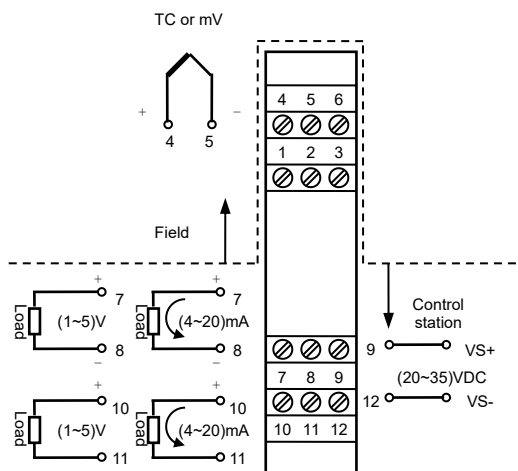
Isolation

Better than 2500VAC between input and output terminals.

Application

Types J, K, T, E, R, S, B or N THCs, mV

Wiring



*Please read the ordering instructions carefully when selecting the type.

■ HD1077 1 INPUT 2 OUTPUTS RTD TRANSMISSION ISOLATOR

The HD1077 accepts RTD or resistance signals from field area and converts into 2 channels with (4~20)mA or (1~5)V signal to control area. Users can customize the type of signal and input range within the max range.

Number of channels

1 input 2 outputs

Power supply

Voltage: (20~35)VDC

Current: 80mA (24V at 20mA output)

Input and output signal range

3-wire Pt100, Pt1000, Cu50, (0~2200) Ω

**Note: Excitation current < 0.5mA*

Output signal

(4~20)mA

**Note: Clear indication should be given in ordering code when 1 to 5V is needed.*

Output Load capability

(0~450) Ω

Response time

About 500ms

Over range output

When input over range value, the fixed output of current as below:

Bottom limit: 3.6mA

Top limit: 21.6mA

Sensor burnout indication

Downscale default, upscale selectable

Upscale valve: 22mA

Downscale valve: 3.2mA

Common mode rejection

120dB (250V@50Hz)

Series-mode rejection

40dB (50Hz)

Transmission accuracy

Input

Cu50/Pt100: $\pm 80m\Omega$

Pt1000: $\pm 400m\Omega$

Output: $\pm 11\mu A$

Temperature drift

Input

Cu50/Pt100: $\pm 7m\Omega/^{\circ}C$

Pt1000: $\pm 40m\Omega/^{\circ}C$

Output: $\pm 0.6\mu A/^{\circ}C$

LED indicator

PWR: Green for power on indication.

STS: Green for normal working status indication, blinking green for over range indication, red for error status.

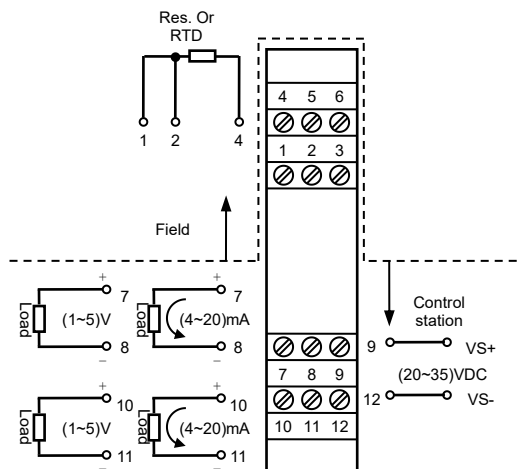
Isolation

Better than 2500VAC between input and output terminals.

Application

Cu50, Pt100, Pt1000 and resistance

Wiring



*Please read the ordering instructions carefully when selecting the type.

■ HD1141 SINGLE CHANNEL ANALOG INPUT LOOP-POWERED ISOLATOR

The HD1141 passive isolator obtains power from output and provides power to a 2-wire transmitter in the field, and repeats on-site (4~20)mA signal to the output. It is a 2-wire loop-powered passive isolator.

Number of channels

1

Input

Input signal: (4~20)mA

Overload: $\leq 30\text{mA}$ (with over current protection)

Voltage drop: (typical value) 5V at 20mA

Output

Output signal: (4~20)mA

Load capability: $R_L \leq (V_{in}-5)/0.02-150(\Omega)$

Load adjustment rate: 0.05%F.S./100 Ω

Transmission characteristic

Zero: 0.3%F.S.

Accuracy: 0.3%F.S.

Temperature drift: 0.3%F.S./10 $^{\circ}\text{C}$, max drift < 0.4%F.S.

Loop supply voltage

Typical value: (10~30)V

Max value: 40V (Exceeding the maximum value will damage the isolator)

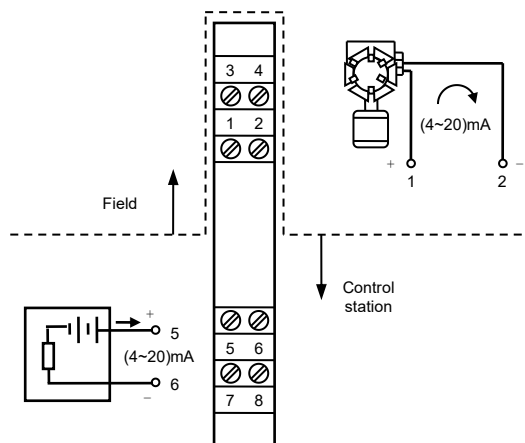
Isolation

Better than 2500VAC between input and output terminals.

Application

2-wire transmitter

Wiring



*Please read the ordering instructions carefully when selecting the type

HD1144 DUAL CHANNEL ANALOG INPUT LOOP-POWERED ISOLATOR

The HD1144 passive isolator obtains power from output and provides power to 2 pcs of 2/3-wire transmitter in the field, and repeats on-site (4~20)mA signal to the output. It is a 2-wire loop power passive isolator. The HD1144 has two isolated channels.

Number of channels

2

Input

Input signal: (4~20)mA

Overload: ≤ 30mA (with over current protection)

Voltage drop: (typical value) 5V at 20mA

Output

Output signal: (4~20)mA

Load capability: $RL \leq (V_{in}-5)/0.02-150(\Omega)$

Load adjustment rate: 0.05%F.S./100Ω

Transmission characteristic

Zero: 0.3%F.S.

Accuracy: 0.3%F.S.

Temperature drift: 0.3%F.S./10°C, max drift < 0.4%F.S.

Loop supply voltage

Typical value: (10~30)V

Max value: 40V (Exceeding the maximum value will damage the isolator)

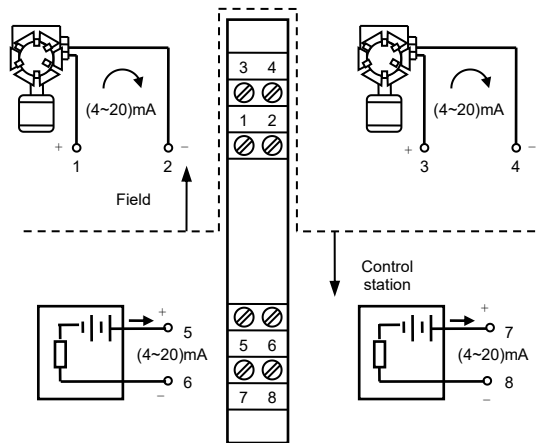
Isolation

Better than 2500VAC between input and output terminals.

Application

2-wire transmitter

Wiring



*Please read the ordering instructions carefully when selecting the type

■ HD1145 SINGLE CHANNEL CURRENT TRANSMISSION PASSIVE ISOLATOR

HD1145 obtains power from the input signal (4~20)mA current, and repeats the (4~20)mA to field side or converts into (1~5)V and has the Load capability. It is a current transmission passive isolator.

Number of channels

1

Input

Input signal: (4~20)mA

Overload: $\leq 50\text{mA}$

Voltage drop: (typical value) $3\text{V}@20\text{mA}$

Output

Output signal: (4~20)mA

Load capability: $\leq 300\Omega@20\text{mA}$

Load adjustment rate: $< 0.05\%\text{F.S.}/100\Omega$

**Note: Clear indication should be given in ordering code when 1 to 5V is needed*

Transmission characteristic

Zero: 0.1%F.S.

Accuracy: 0.1%F.S.

Temperature drift: 35PPM/°C

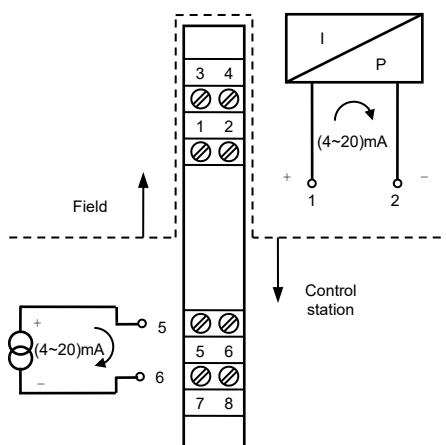
Isolation

Better than 2500VAC between input and output terminals.

Application

Electrical pneumatic converter, valve positioner, etc.

Wiring



*Please read the ordering instructions carefully when selecting the type

■ HD1149 DUAL CHANNEL CURRENT TRANSMISSION PASSIVE ISOLATOR

HD1149 obtains power from the input signal (4~20)mA current, and repeats the (4~20)mA to field side or converts into (1~5)V and has the Load capability. It is a current transmission passive isolator. HD1049 has two isolated channels.

Number of channels

2

Input

Input signal: (4~20)mA

Overload: ≤ 50mA

Voltage drop: (typical value) 3V@20mA

Output

Output signal: (4~20)mA

Load capability: ≤ 300Ω@20mA

Load adjustment rate: < 0.05%F.S./100Ω

**Note: Clear indication should be given in ordering code when 1 to 5V is needed*

Transmission characteristic

Zero: 0.1%F.S.

Accuracy: 0.1%F.S.

Temperature drift: 35PPM/°C

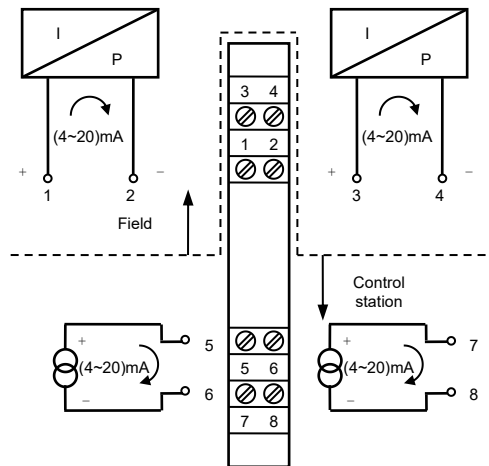
Isolation

Better than 2500VAC between input and output terminals.

Application

Electrical pneumatic converter, valve positioner etc.

Wiring



*Please read the ordering instructions carefully when selecting the type

■ HD1171 THERMOCOUPLE TRANSMISSION PASSIVE ISOLATOR

HD1171 accepts on-site thermocouple signals or mV signals, converts into (4~20)mA and repeats to the output. It is 2-wire loop-powered passive isolator.

Number of channels

1

Input

Model	Type	Range	Accuracy	Min range	Min range Accuracy
TC	E	(-200~1000)°C	1°C/0.1%	50K	1°C/0.1%
	J	(-210~1200)°C	1°C/0.1%	50K	1°C/0.1%
	K	(-270~1372)°C	1°C/0.1%	50K	1°C/0.1%
	N	(-200~1300)°C	1°C/0.1%	50K	1°C/0.1%
	T	(-270~400)°C	1°C/0.1%	50K	1°C/0.1%
	B	(300~1820)°C	3°C/0.1%	500K	3°C/0.1%
	R	(0~1768)°C	3°C/0.1%	500K	3°C/0.1%
mV	mV	(-10~75)mV	20µV/0.1%	5mV	20µV/0.1%
		(-100~1100)mV	200µV/0.1%	20mV	200µV/0.1%

Output

Output signal: (4~20)mA

Max Load

Max.(Voltage-10V) /0.022A(current)

Typical accuracy

0.2°C or ±0.1%

Typical temperature drift

±0.08%/10°C

Response time

500ms

Start up time

Better than 4s when damping is set to 0s.

Damping

Range (0~32)s

Saturation current

Upper limit: 20.8mA

Lower limit: 3.8mA

Wire break alarm

22mA

Cold junction accuracy

±1°C

Isolation

Better than 2500VAC between input and output terminals.

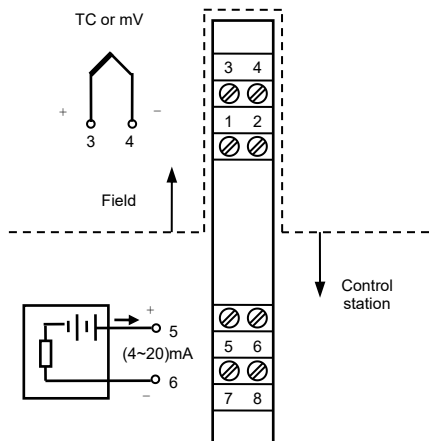
Power supply

(10~35)VDC

Application

Types J, K, T, E, R, S, B or N THCs, mV

Wiring



*Please read the ordering instructions carefully when selecting the type.

HD1172 RTD TRANSMISSION PASSIVE ISOLATOR

HD1172 accepts on-site RTD signals or resistance signals, converts into (4~20)mA and repeats to the output. It is 2-wire loop-powered passive isolator.

Number of channels

1

Input

Model	Type	Range	Accuracy	Min range	Min range accuracy
RTD	Pt100	(-200~850)°C	0.2°C/0.1%	10K	0.2°C/0.1%
	Pt500	(-200~850)°C	0.2°C/0.1%	10K	0.2°C/0.1%
	Pt1000	(-200~350)°C	0.23°C/0.1%	10K	0.23°C/0.1%
	Cu50	(-50~150)°C	0.4°C/0.1%	10K	0.4°C/0.1%
	Cu100	(-50~150)°C	0.4°C/0.1%	10K	0.4°C/0.1%
	Ni100	(-60~180)°C	0.2°C/0.1%	10K	0.2°C/0.1%
	Ni500				
Ni1000	(-60~150)°C	0.2°C/0.1%	10K	0.2°C/0.1%	
Resistance Sensor	Res.	(0~390)Ω	0.5Ω/0.1%	5Ω	0.5Ω/0.1%
	Sensor	(0~2000)Ω	0.7Ω/0.1%	25Ω	0.7Ω/0.1%

Output

Output signal: (4~20)mA

Max Load

Max.(Voltage-10V) /0.022A(current output)

Typical accuracy

0.2°C or ±0.1%

Typical temperature drift

±0.08%/10°C

Response time

1s

Start up time

Better than 4s when the damping is set to 0s.

Damping

Range (0~32)s

Saturation current

Upper limit: 20.8mA

Lower limit: 3.8mA

Wire break alarm

22mA

Isolation

Better than 2500VAC between input and output terminals.

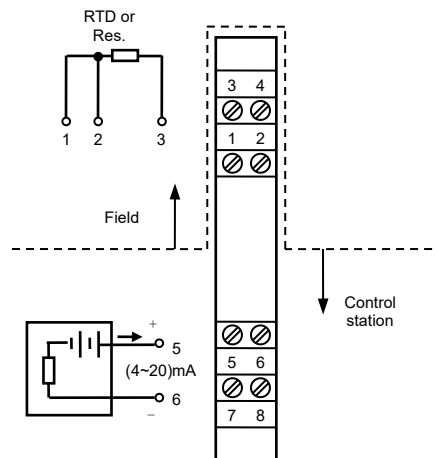
Power supply

(10~35)VDC

Application

RTD Cu50, Pt100, Pt1000, etc. and resistance.

Wiring



*Please read the ordering instructions carefully when selecting the type.

ADD: No.309 Liuhe Road, Binjiang District, Hangzhou, 310053, China
TEL: 0571-86667888, 86667541
FAX: 0571-86667711
E-mail: ybmarket@supcon.com
WEB: en.supcon.com

